



Subject : **MACHINE DESIGN**
(Code: 23005163)
Guarantee : doc. Ing. Silvia MALÁKOVÁ, PhD., Ing.Paed.IGIP
Lecturer : doc. Ing. Silvia MALÁKOVÁ, PhD., Ing.Paed.IGIP
Students : 1-st Study Year, Summer Semester
Volume : 2x45 min practices per week, 2 credits
Completion : Classified Credit

1. SCHEDULE OF PRACTICES

Week	Practices	Study control process
1.	Study organization. Introduction to the subject. Literature. Information about exercise book, programs. Information about programs, their schedule and evaluation.	
2.	Assignment of PROGRAM 1: <u>Design proposal of shaft with gear wheel situated in the gearbox body on the bearings.</u> <i>Solution positioning of shaft on gearbox by use bearing. It is necessary to solve these points:</i> <ol style="list-style-type: none">To sketch all unstandardized parts from given assembly into your workbook (only shapes, do not dimensioning them).To sketch all standardized parts from given assembly into your workbook and to write their identification according standard.To sketch the whole assembly in to your workbook with title block.To fill in list of items (or parts).To calculate geometric size of gear wheel. (To calculated size of basic geometric parameters of gear wheel.)To determine basic size of shaft and to sketch a drawing of shaft in your workbook. To fill in a title block.To determine basic size of gear wheel and to sketch a drawing of gear wheel in your workbook. To fill in a title block.To determine basic size of gearbox cover and to sketch a drawing of cover in your workbook. To fill in a title block.To elaborate of assembly drawing in the scale 1:1.To elaborate of items list as format A4.To elaborate of drawing of shaft, gear wheel and cover in the scale 1:1. Schedule, submission, and rating of the program: Schedule: 2 nd week Submission: 7 th week Rating: max. 50%. Instructions: In the workbook, draw up each program task with your free hand (pencil) on the right side. The individual work of the student in the workbook is rating, which must include all assigned tasks in satisfactory quality. Individual work on Program 1 - elaboration of points 1. and 2. Checking of exercise book – given tasks.	Checking of the exercise book. Blank A4 format with minimum 40 pages. Checking the compliance as required by given instructions: Title page, Schedule, etc. Submission of the first and second points of program 1.
3.	Individual work on Program 1 - elaboration of points 3. and 4. Checking of exercise book – given tasks.	Submission of the third and fourth points of program 1.
4.	Individual work on Program 1 - elaboration of points 5. and 6. Checking of exercise book – given tasks.	Submission of the fifth and sixth points of program 1.
5.	Individual work on Program 1 - elaboration of points 7. and 8. Checking of exercise book – given tasks.	Submission of the seventh and eighth points of program 1
6.	Individual work on Program 1 - elaboration of points 9., 10. and 11. Testing and scoring Program 1 in the exercise book.	Testing and scoring Program 1 in the exercise book.
7.	Submission of Program no.1 and rating of technical documentation. Assignment of PROGRAM 2: <u>Design of welded steel construction.</u> <i>It is necessary to solve these points:</i> <ol style="list-style-type: none">To sketch scheme of welded construction and to calculate all length of steel bars.To sketch all cross sections of steel bars from given assembly into your workbook. Sketching and dimensioning of cross sections of steel bars with real size using the study materials.To sketch the whole assembly into your workbook with title block and to dimensioning of all welds.To fill in list of items (or parts).	Submission of Program 1. Finished technical drawings. Evaluation: max 35%

	<p>5. To elaborate assembly drawing of welded steel bar construction in the scale 1:X, (1:5, 1:10, 1: 20).</p> <p>6. To elaborate items list as format A4.</p> <p>Schedule, submission and rating of the program: Schedule: 8th week Submission: 12th week Rating: max. 50%.</p> <p>Instructions: In the workbook, draw up each program task with your free hand (pencil) on the right side. The individual work of the student in the workbook is rating, which must include all assigned tasks in satisfactory quality.</p> <p>Individual work on Program 2 - elaboration of point 1.</p>	
8.	<p>Individual work on Program 2 - elaboration of points 2. and 3</p> <p>Checking of exercise book – given tasks.</p>	Submission of the first point of program 2.
9.	<p>Individual work on Program 1 - elaboration of points 4., 5. and 6.</p> <p>Checking of exercise book – given tasks.</p>	Submission of 2. and 3. points of program 2.
10.	<p>Individual work on Program 1 - elaboration of points 5. and 6.</p> <p>Testing and scoring Program 2 in the exercise book.</p>	Testing and scoring Program 2 in the exercise book.
11.	<p>Written test: Assembly detailing.</p> <p>Content of the written test: Preparation of component detail drawings from an assembly. For the specified non-standardized component specified from the assembly, prepare a complete manufacturing drawing in the form of a sketch (freehand).</p>	Evaluation: max 30%
12.	<p>Submission of Program no.2 and rating of technical documentation.</p>	<p>Submission of Program 2. Finished technical drawings.</p> <p>Evaluation: max 35%</p>
13.	Assessment and completion of the course.	Granting of Classified Credit.

2. LITERATURE

- [1] HOMIŠIN, J., MALÁKOVÁ, S., URBANSKÝ, M, SIVÁK, S.: Practical solution of tasks in the subjects of machine design, Study litera TUKE edition, Košice, 2020.
- [2] GREGA, R. – KAŠŠAY, P.: Technical Design. Technical university of Košice, 2015, on CD.
- [3] COLIN, H. et al.: Manual of Engineering Drawing – Third edition. Elsevier, 2009.
- [4] OBERG, E. et al.: Machinery's Handbook – 27th Edition, Industrial Press, 2004.
- [5] Engineering Drawing Practice for Schools & Colleges – SP 46:2003. Bureau of Indian Standards, 2003.

3. REQUIREMENTS FOR SUCCESFULL COMPLETION OF THE SEMESTER

1. **Attendance of practices is mandatory.** Absence must be justified by an official form (confirmation from doctor, police, etc. with stamp, signature and date). Repeated absence will be reported to the responsible staff at the faculty management.
2. **Maximum delay for exercises is 15 minutes.** After this time the student will not be allowed to participate in the lessons.
3. **Use of exercise book practices is mandatory.** Exercise book must have an A4 format with blank pages. Other requirements will be announced on practices.
4. **Other mandatory tools** for practices: **2 Pencils** (one for wide lines and one for narrow lines), **Eraser. Technical Tables. Lecture Notes** or other literature dealing with technical drawing and machine design.
5. **Independent and systematic work on programs.**
6. **The exercise book must contain complete programs** in form of free hand sketches (with pencil) in satisfactory quality.
7. **Final technical drawings for programs:** The student begins the work on them only after the corresponding sketch in the exercise book is fully finished and approved by the teacher.
8. **Submission of programs according to the schedule in satisfactory quality.** Programs must be drawn with pencil using drawing tools (Ruler, triangle, compass, etc.).
9. The **maximum evaluation** of partial tasks can be obtained **only for work on exercises.**

4. FINAL RATING

Program 1.....	max. 35%	
Program 2.....	max. 35%	
Written test.....	max. 30%	
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Overall Semester Credit.....	max. 100%	min. 51%